Lateral meniscus width at the popliteus recess and the relevance to saucerization of discoid lateral menisci

Gamble, Jamison G ; Abdalla, Abdalla B ; Meadows, Molly ; Rauer, Thomas ; Chan, Charles M ; Ganley, Theodore J ; Shea, Kevin G ; Gamble, James G

Abstract: Background: Discoid lateral meniscus (DLM) is a congenital anomaly of the knee where the normally "O" shaped lateral meniscus has redundant tissue filling the "O" and covering the lateral tibial plateau. The redundant tissue can cause mechanical symptoms and pain. Treatment of symptomatic DLM is arthroscopic saucerization to reshape the meniscus to a more normal contour. Enough tissue must be removed to eliminate mechanical symptoms but not too much as to create instability. The residual width of the meniscus is crucial at the popliteus hiatus because here the peripheral rim is unattached to the capsule. The literature recommends a residual width of 6-8 mm.1,2 Purpose/Hypothesis: The primary purpose of this research is to determine the width of the meniscus at the popliteal hiatus in normal specimens. Our null hypothesis is that a residual width of 6-8 millimeters will be sufficient for saucerization of DLM. Methods: We made direct measurements of lateral meniscus radial width from the outer rim at the popliteus hiatus to the inner edge (Figure 1) in 19 specimens (ages 2 months to 120 months.) We measured one four-year-old specimen with bilateral complete DLM. We also measured 39 digital images of specimens (ages 1 month to 132 months) using ImageJ. Finally, we made direct measurements of 8 skeletally mature specimens. Results: Figure 2 shows the relationship of meniscus width as a function age. The average width of specimens <3-years-old was 5.5mm. The average width of the ten-year-old specimens was 12mm. The average width of the skeletally mature specimens was 16mm. The four-year-old DLM specimen measured 19 mm. Conclusions: We rejected our null hypothesis. Direct measurements suggest that a residual width of 6-8mm is insufficient for children 8-years and older. A width of at least a full centimeter more closely approximates our findings, and for adolescents consider a residual rim of 15 mm. For children less than six-years-old a residual width of 6-8mm is sufficient.

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LATERAL MENISCUS WIDTH AT THE POPLITEUS RECESS AND THE RELEVANCE TO SAUCERIZATION OF DISCOID LATERAL MENISCI

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Key Words: Discoid lateral meniscus; Meniscus width; Saucerization

Background: Discoid lateral meniscus (DLM) is a congenital anomaly of the knee where the normally "O" shaped lateral meniscus has redundant tissue filling the "O" and covering the lateral tibial plateau. The redundant tissue can cause mechanical symptoms and pain. Treatment of symptomatic DLM is arthroscopic saucerization to reshape the meniscus to a more normal contour. Enough tissue must be removed to eliminate mechanical symptoms but not too much as to create instability. The residual width of the meniscus is crucial at the popliteus hiatus because here the peripheral rim is unattached to the capsule. The literature recommends a residual width of 6-8 mm.[1,2]
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Results: Figure 2 shows the relationship of meniscus width as a function age. The average width of specimens <3-years-old was 5.5mm. The average width of the ten-year-old specimens was 12mm. The average width of the skeletally mature specimens was 16mm. The four-year-old DLM specimen measured 19 mm.
Conclusions: We rejected our null hypothesis. Direct measurements suggest that a residual width of 6-8mm is insufficient for children 8-years and older. A width of at least a full centimeter more closely approximates our findings, and for adolescents consider a residual rim of 15 mm. For children less than six-years-old a residual width of 6-8mm is sufficient.

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Figure 1: Measurement of the radial width of the lateral meniscus from the outer edge at the popliteus recess to the inner edge as would be observed from an inferior-medial arthroscopic portal.

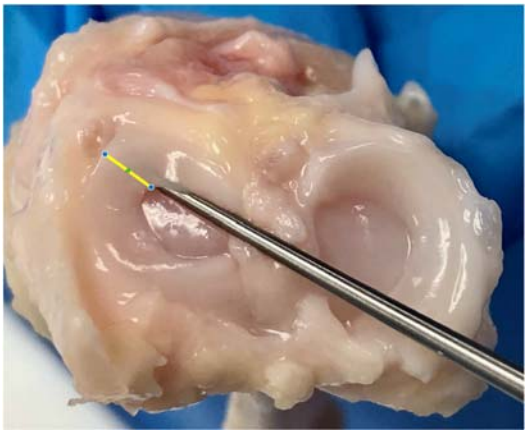
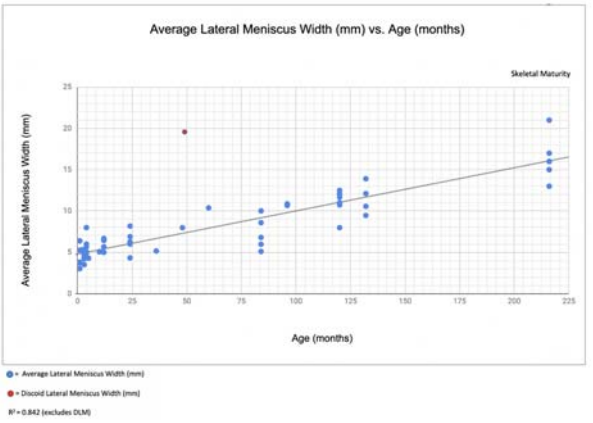


Figure 2: Graph of meniscus width verses age.



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